

How Many Earth-Like Planets in the Galaxy?

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Traditional Astronomy



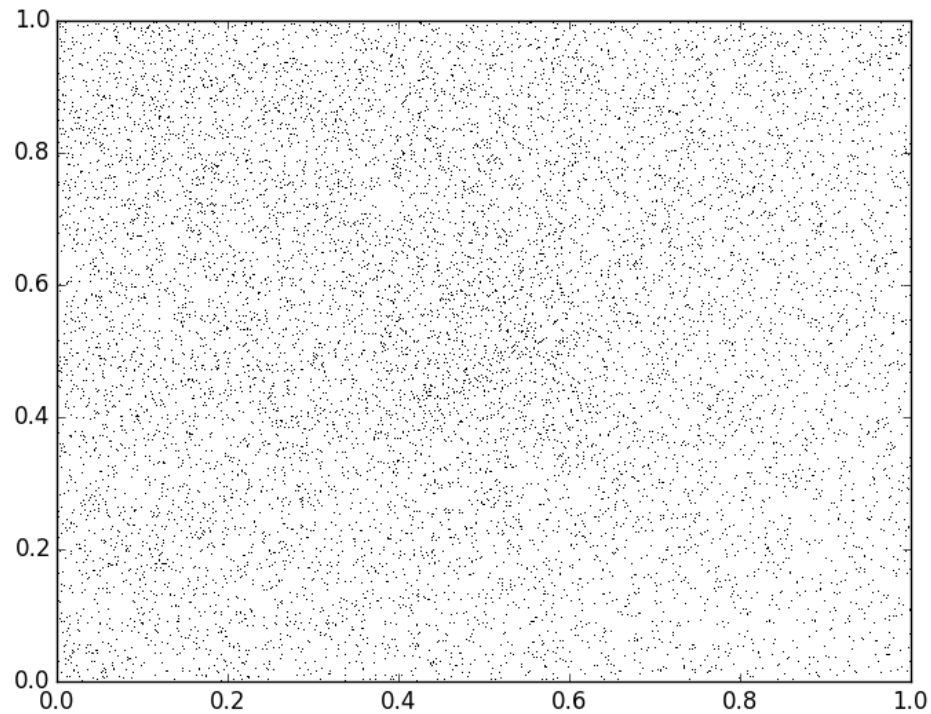
	RA	(2000)	DEC	L	B	R_Sun	R_gc
	00 24	05.67	-72 04 52.6	305.89	-44.89	4.5	7.4
	00 52	45.24	-26 34 57.4	152.30	-89.38	8.9	12.0
	01 03	14.26	-70 50 55.6	301.53	-46.25	8.6	9.4
	02 02	57	-03 15 10	161.22	-60.76	30.1	34.5
	03 12	16.21	-55 12 58.4	270.54	-52.12	16.3	18.1
	03 33	20.04	+79 34 51.8	130.06	19.03	11.1	17.2
	03 55	02.3	-49 36 55	258.34	-48.47	123.3	124.6
	04 24	44.5	-21 11 13	218.10	-41.33	90.1	95.0
	04 46	05.91	+31 22 53.4	170.53	-9.07	27.2	35.0
	05 14	06.76	-40 02 47.6	244.51	-35.03	12.1	16.6
	05 24	11.09	-24 31 29.0	227.23	-29.35	12.9	18.8
	06 48	59.41	-36 00 19.1	245.63	-16.00	10.8	15.8
	07 38	08.47	+38 52 56.8	180.37	25.24	82.6	89.9
	07 58	17.0	+26 15 18	195.12	25.54	34.7	41.9
	09 07	57.8	-37 13 17	261.32	7.00	39.4	41.4
	09 12	03.10	-64 51 48.6	282.19	-11.25	9.6	11.1
	09 20	57.07	-77 16 54.8	292.27	-19.02	8.1	9.1
	10 05	31.9	+00 04 18	240.15	41.86	92.5	95.7
	10 17	36.82	-46 24 44.9	277.23	8.64	4.9	8.8
	11 29	16.80	+28 58 24.9	202.31	71.80	108.7	111.2
	11 59	18.5	+12 15 36	260.99	70.75	48.3	49.3
	12 10	06.30	+18 32 33.5	252.85	77.19	19.3	21.4
	12 25	45.40	-72 39 32.4	300.99	-9.88	5.8	7.1
	12 38	40.2	-51 09 01	300.88	11.67	21.2	18.5
	12 39	27.98	-26 44 38.6	299.63	36.05	10.3	10.2
	12 59	33.92	-70 52 35.4	303.60	-8.02	6.6	7.0
	13 12	55.25	+18 10 05.4	332.96	79.76	17.9	18.4
	13 16	27.09	+17 42 00.9	335.70	78.95	17.4	17.8
Cen	13 26	47.24	-47 28 46.5	309.10	14.97	5.2	6.4
	13 42	11.62	+28 22 38.2	42.22	78.71	10.2	12.0
	13 46	26.81	-51 22 27.3	311.61	10.57	11.7	8.9
	13 56	21.7	-27 10 03	320.28	33.51	32.2	27.8
	14 05	27.29	+28 32 04.0	42.15	73.59	16.0	16.3

Uncertainty

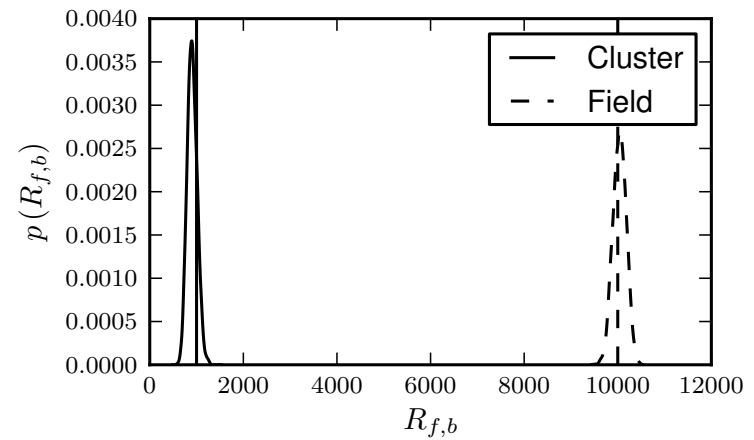
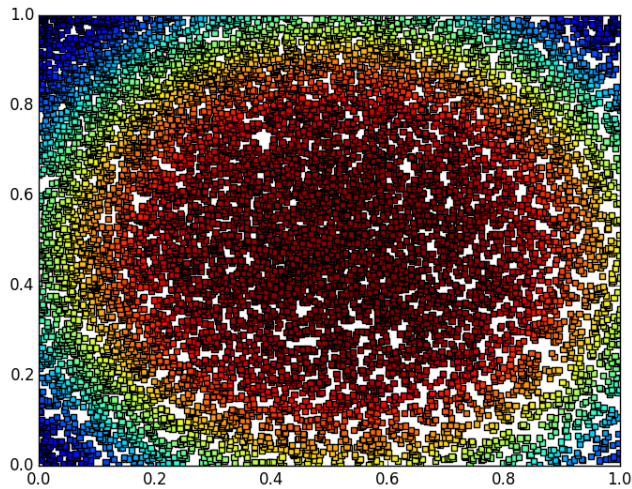
- But what if you can't reliably identify objects to put in a catalog?
- What if the population in the catalog does not reflect the actual population?



Hypothetical Observation



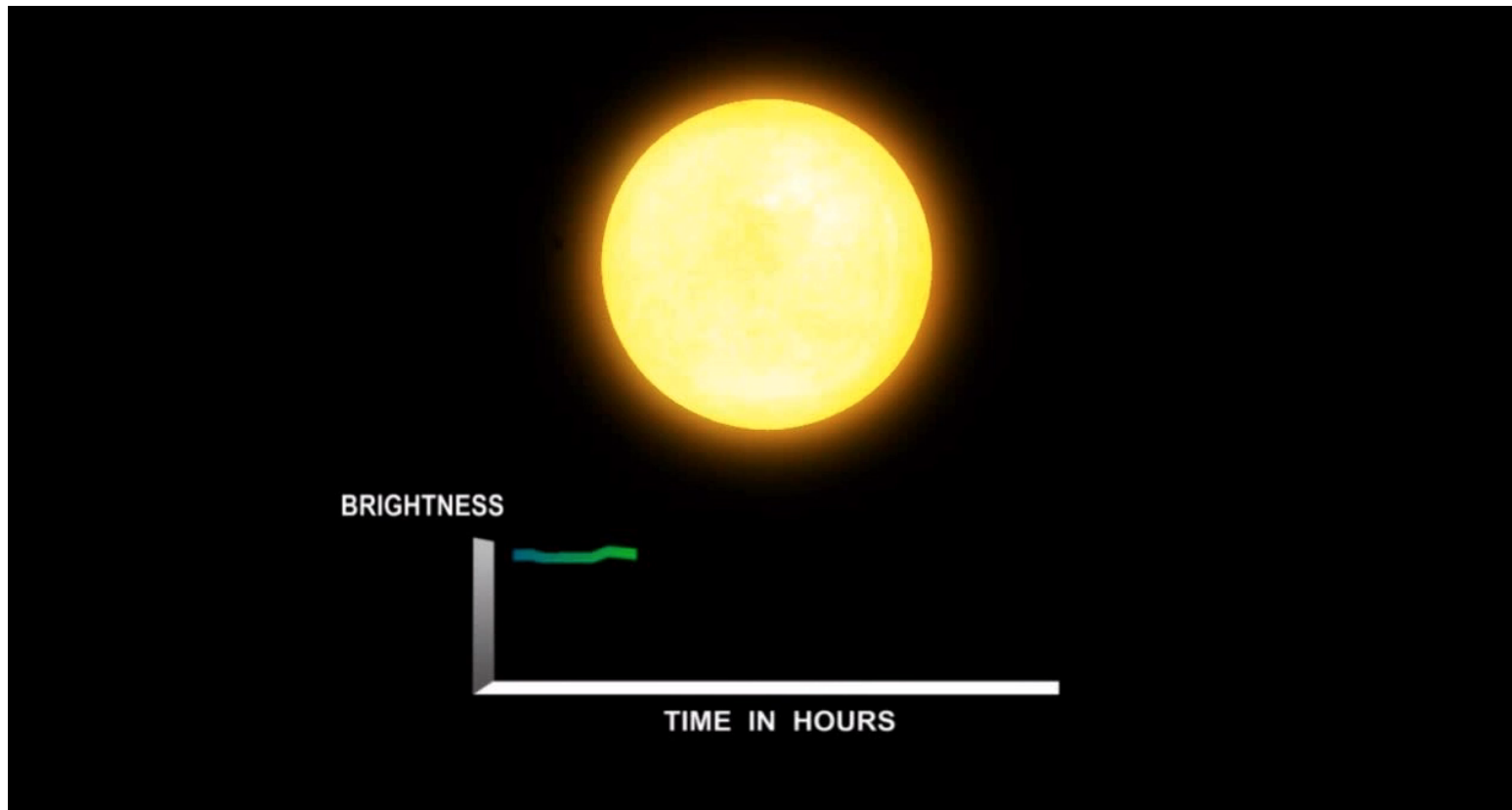
Hypothetical Observation II



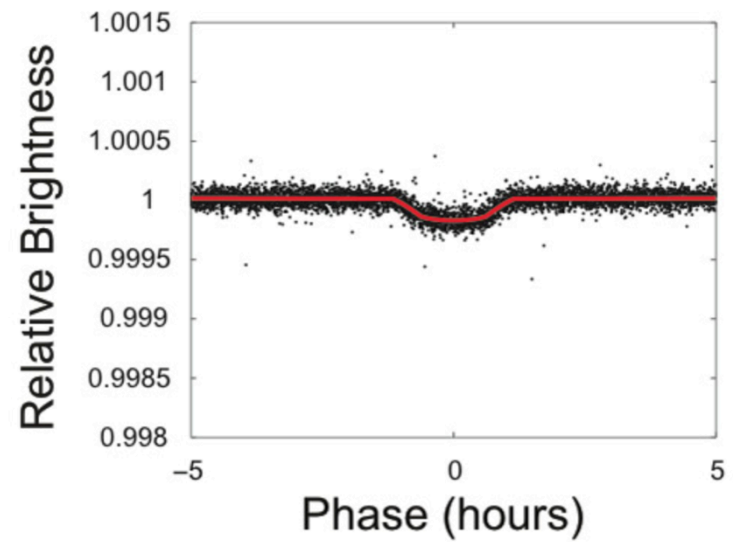
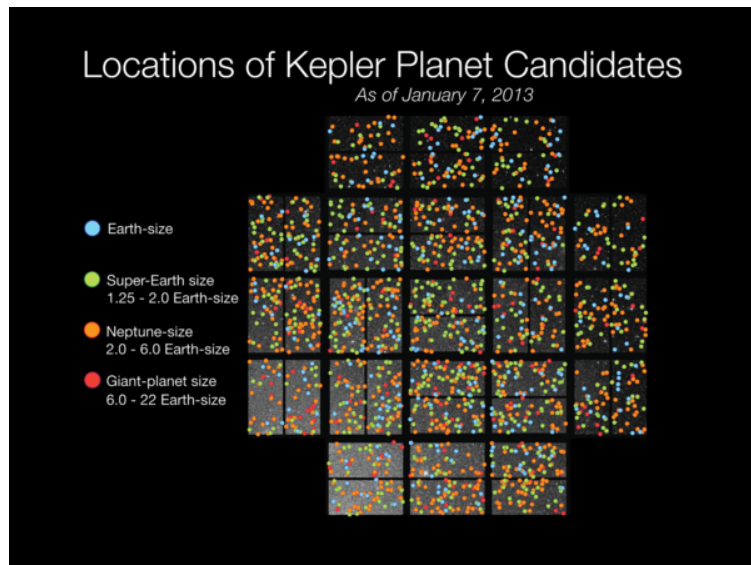
Kepler Mission



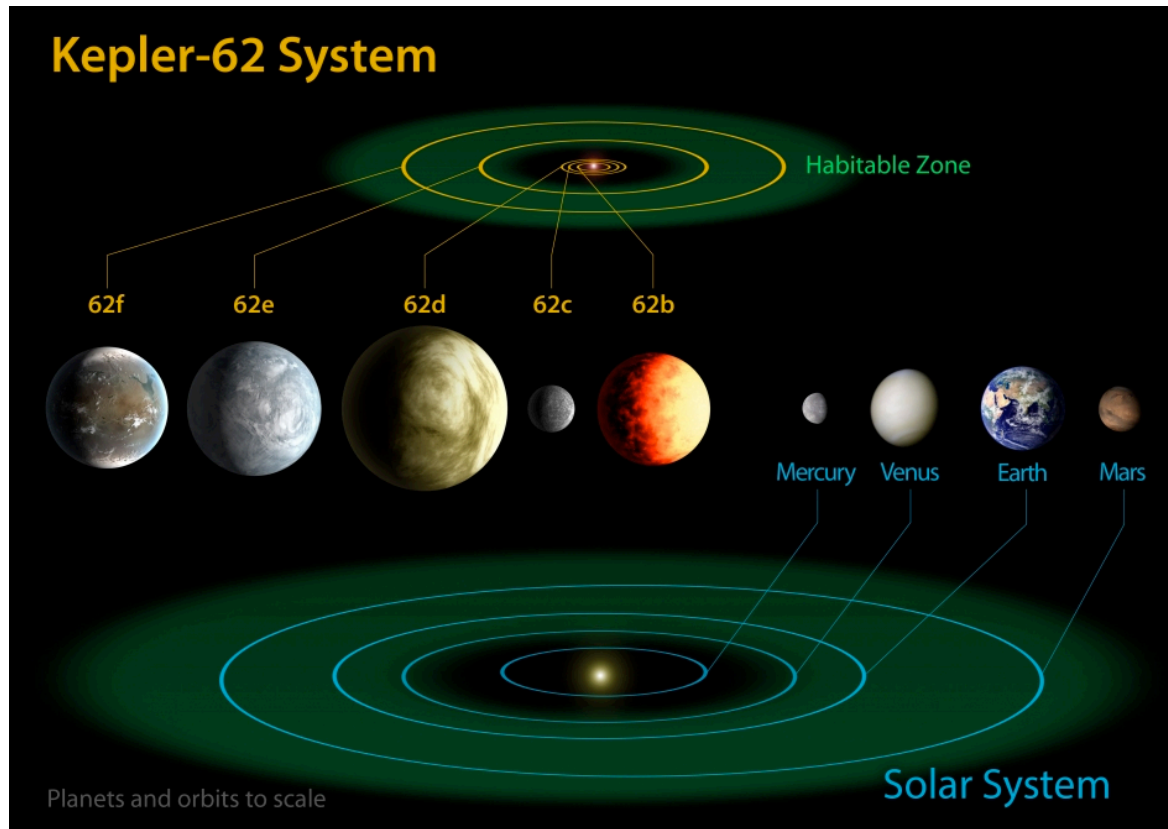
Planet Transits



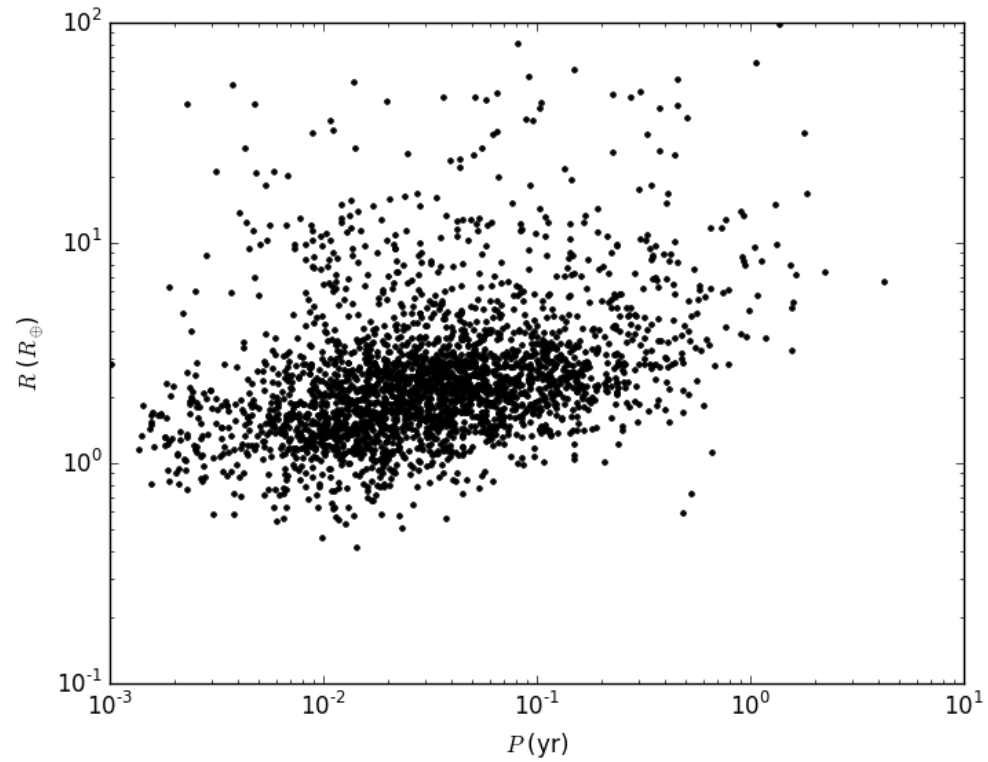
Kepler



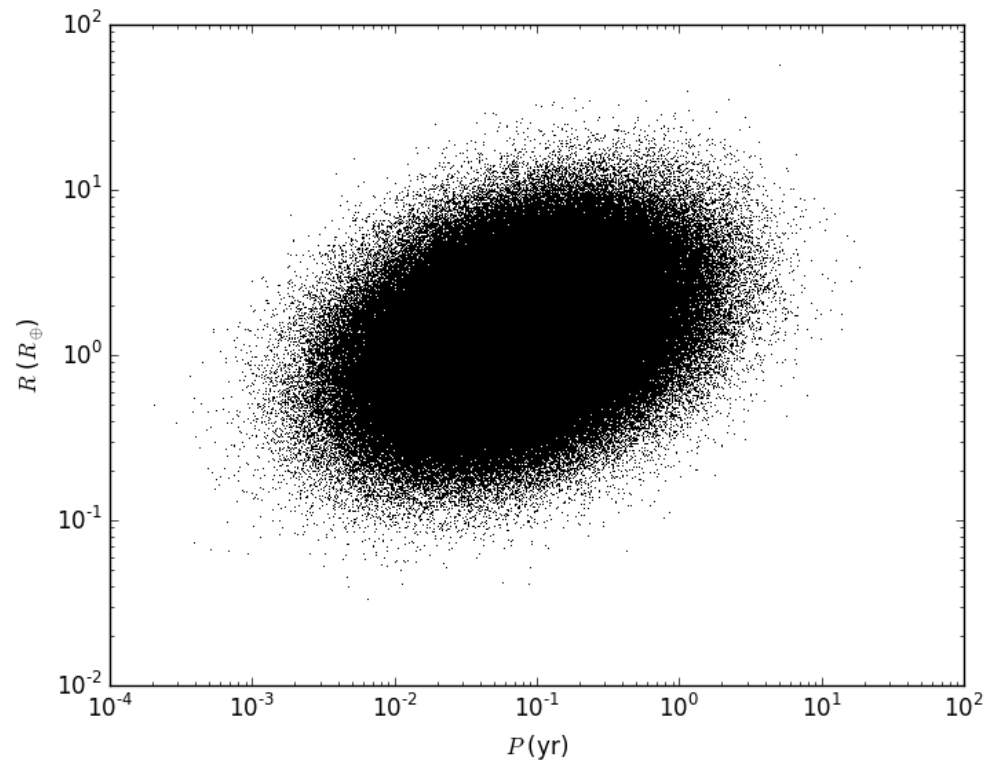
Kepler 62



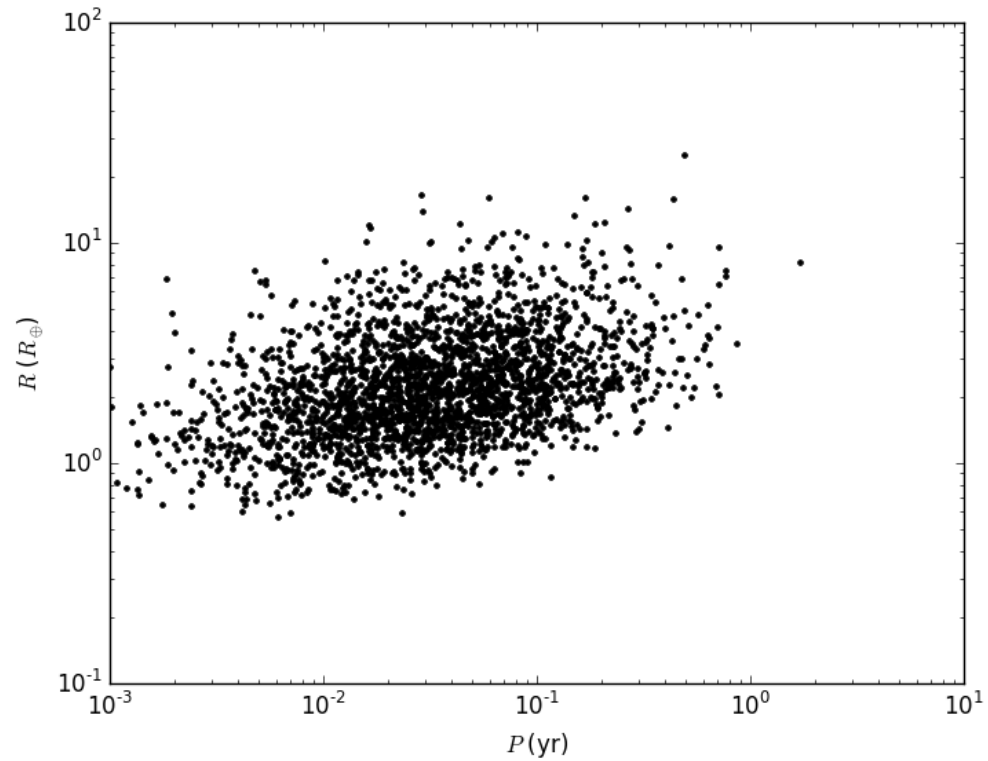
Candidates



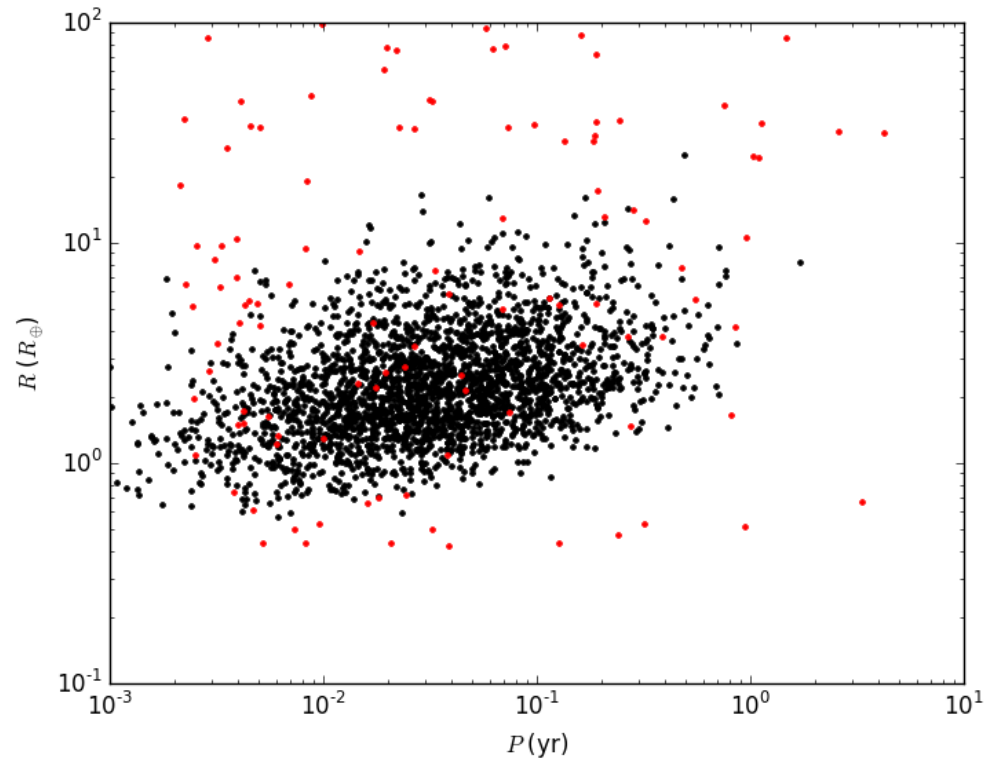
Modeling: Intrinsic



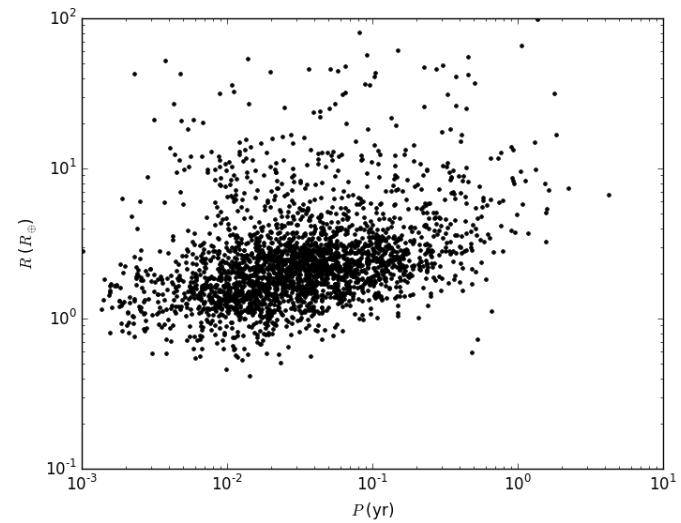
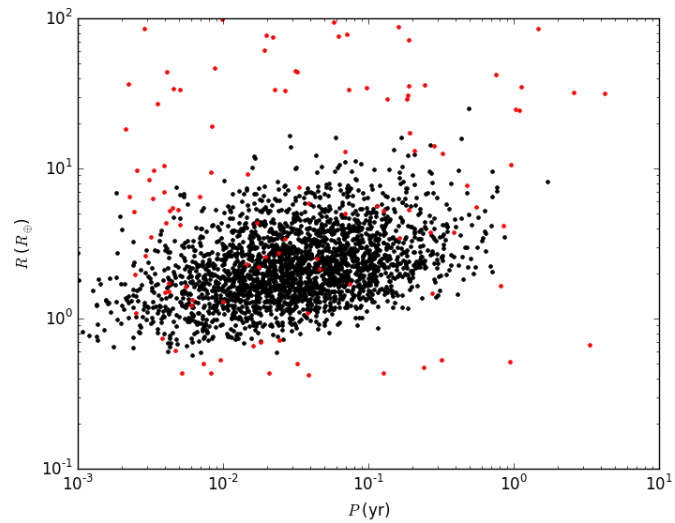
Modeling: Selected



Modeling: Background



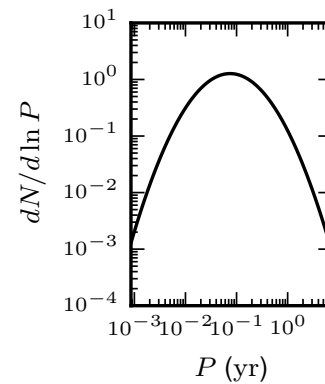
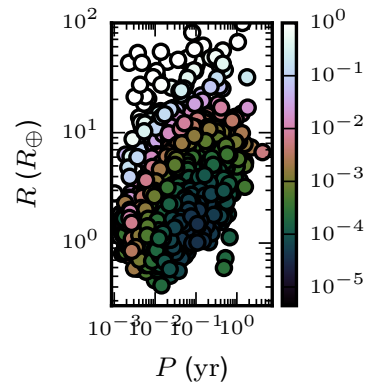
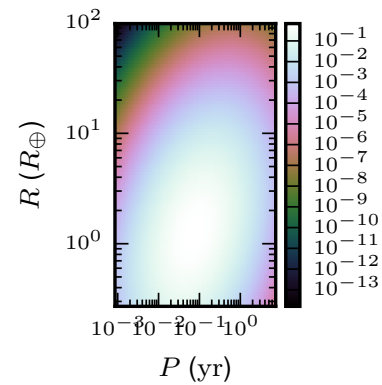
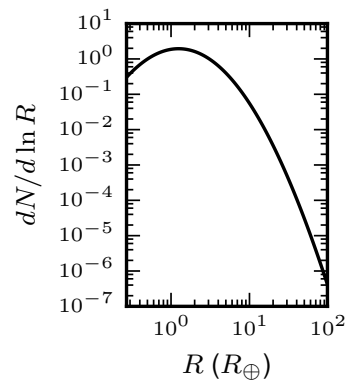
Compare



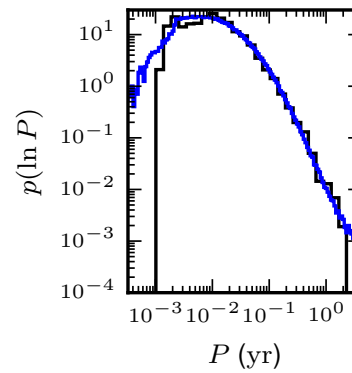
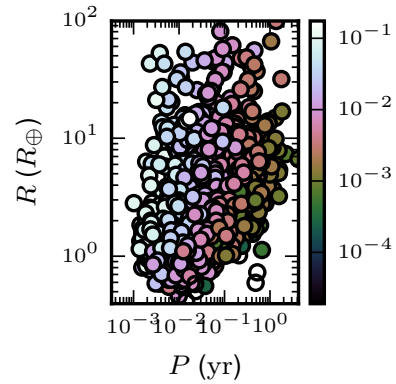
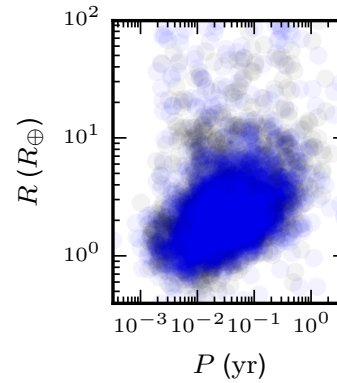
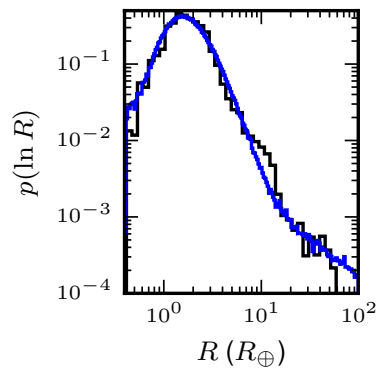
Repeat....

- a lot!

Earth-Like Planets



Model Check



Counting

